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ABSTRACT

The Indiana Department of Education (IDOE) has administered the Early Literacy Intervention Grant Program (ELIGP) since 1997. During the first 3 years of the program, about half of the state's elementary schools received funding through ELIGP, either through Reading Recovery or Other Early Literacy Interventions (OELI). This report summarizes the evaluation study of the impact of the ELIGP during those 3 years. The study reveals that Indiana's elementary schools have a balanced approach to early reading. The report cites specific findings and states that early literacy programs that are appropriately selected to serve student needs appear to improve student outcomes regardless of poverty levels. It finds that several types of funded programs (e.g., Success for All, Literacy Collaborative, First Steps, Reading Recovery, Even Start) and program features influenced literacy outcomes when the effects of other school characteristics that influence early reading were taken into account. The study identified common patterns of practice among the instructional and organizational features of early reading programs in Indiana's elementary schools, and the effect of these patterns of practice on early literacy outcomes was also examined. On the basis of findings, the report recommends that: the ELIGP should be continued with an emphasis on Reading Recovery and on comprehensive restructuring methods; continuing evaluation research on early literacy interventions can help improve efforts by the IDOE, school corporations, and schools to design better approaches to literacy improvement; and the IDOE should facilitate collaboration between schools and universities on teacher preparation and professional development. (NKA)

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Progress in Early Literacy:

Summary Evaluation of Indiana's Early Literacy Intervention Grant Program

1997-98 through 1999-00 School Year

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Executive Summary

The Indiana Department of Education has administered the Early Literacy Intervention Grant Program (ELIGP) since 1997. During the first three years of the program, about half of the state's elementary schools received funding through ELIGP, either through Reading Recovery or Other Early Literacy Interventions (OELI). This report summarizes the evaluation study of the impact of ELIGP during the first three years of funding.

How Did Funded Schools Differ From Comparison Schools?

The study reveals that Indiana's elementary schools have a balanced approach to early reading. The analysis of annual surveys conducted during the study reveals a pattern of change in early reading programs in Funded Schools. Specific findings include:

- Schools funded by Reading Recovery and/or OELI had more professional development in support of early literacy programs. Both types of schools had more parent involvement in their children's early reading acquisition. Both types of schools also had more comprehensive early reading programs.

- Schools that received funding through Reading Recovery increased the number of Grade 1 students completing this program. In addition, High-Poverty schools (with high percentages of students on free or reduced lunch) with Reading Recovery programs had larger gains in passing rates on the ISTEP+ reading achievement tests two years later in Grade 3 than did High-Poverty schools that did not report an early literacy intervention.

- OELI schools had lower rates of special education referral and grade level retention than Comparison Schools, resulting in greater efficiency in the use of educational resources.

- High-Poverty schools with Success For All, Literacy Collaborative, and Four Blocks Method programs had larger gains in passing rates on ISTEP+ reading achievement than did other High-Poverty schools.

- Low-Poverty schools with Literacy Collaborative and Four Blocks Method had greater gains in ISTEP+ passing rates than did other Low-Poverty schools.

It appears that early literacy programs that are appropriately selected to serve student needs, do improve student outcomes regardless of their poverty levels. Patterns of improvement were evident in all types of school environments, although there was a variation in the types of programs that improve student outcomes in different settings.

What Predicts Literacy Improvement When School Characteristics are Taken into Account?

Several types of funded programs and program features influenced literacy outcomes, when the effects of other school characteristics that influence early reading were taken into account. Some of the key findings include:

- Success For All, Literacy Collaborative, and First Steps, programs funded through OELI, were associated with lower special education referral rates, thus improving efficiency in the system. In contrast, Four Blocks Method, another OELI funded program, was associated with higher special education referral rates.

- Reading Recovery and Success For All were associated with lower rates of grade level retention, indicating these programs improved efficiency in the state's education system.

- Even Start, a preschool program funded through OELI, was positively associated with higher passing rates of ISTEP+ reading achievement for students in Grade 3, while First Steps was negatively associated with this outcome.

This study identified common patterns of practice among the instructional and organizational features of early reading programs in Indiana's elementary schools. The effects of these patterns of practice, or factors, on early literacy outcomes, were also examined. Key findings include:

- *Connected-Text Approaches* (independent reading, cooperative learning, creative/essay writing, emergent spelling, student paired reading, and reading aloud) were associated with lower grade level retention, indicating these approaches increased efficiency in the elementary education system.

- *Explicit/Direct Approaches* (basal readers, phonics instruction, reading drills, and worksheets/ books) were associated with higher retention rates, indicating these approaches reduced system efficiency, and with higher passing rates on ISTEP+ reading achievement, indicating they increased effectiveness.

- *Child-Centered/Expressive Approaches* (child-initiated learning centers, Big Books, cooperative learning, and drama) were associated with lower special education referral rates.

- *Ability-Group/Pullout Approaches* (ability grouping, one-to-one tutoring, pullout instruction, and small groups) were associated with higher rates of special education referral, which indicates these methods reduced efficiency.

- *Trade Books Approaches* (Trade books, Big Books, and deemphasis on basal readers) were associated with lower retention rates, indicating they increased efficiency.

Comprehensive interventions that combine features related to multiple approaches, such as Literacy Collaborative and Reading Recovery, appear to provide an appropriate balance to improve student outcomes. These findings also indicate that the common patterns of instructional practice interact with school outcomes in complex ways. For example, frequent use of Explicit/ Direct Approaches helped teachers improve the percentage of students passing standardized tests, but also increased retention. In contrast, frequent use of Connected-Text Approaches helped reduce retention rates.

How Can Schools Improve Early Literacy?

- Encourage open discussion of alternative intervention methods as a means of encouraging buy-in by all teachers and of selecting an appropriate intervention method.
- Interventions that provide ongoing professional development, including collaboration and networking, have a greater chance of success.
- Parent involvement in reading with children is an essential component of successful interventions.
- Comprehensive, class-wide approaches reach more children and thus improve the chances that more children will succeed.
- A balance between explicit/direct and connected-text approaches helps both engage students and increase the percentage of students who learn to read.
- School-wide interventions should enable teachers to adapt learning environments as needed for children in their classrooms.

Recommendations

These findings indicate that the ELIGP has positively influenced literacy outcomes. Based on these findings, the study team recommends:

- The ELIGP program should be continued with an emphasis on Reading Recovery (for schools selecting this option) and on comprehensive restructuring methods which could include Literacy Collaborative, Four Blocks, First Steps, Even Start, and Success For All. Locally developed interventions that use a comprehensive, balanced approach should also be encouraged.
- Continuing evaluation research on early literacy interventions can help improve efforts by the IDOE, school corporations, and schools to design better approaches to literacy improvement, as well as document the impact of funded interventions.
- The IDOE should facilitate closer collaboration between schools and universities on the development of teacher-preparation and ongoing professional development programs that provide comprehensive approaches to early literacy.

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Progress in Early Literacy: Summary Evaluation of Indiana's Early Literacy Intervention Grant Program 1997-2000

Introduction

In 1997-98, the Indiana Department of Education implemented the Early Literacy Intervention Grant Program (ELIGP) to better meet the state's early literacy challenge. The intent of the ELIGP was to enable schools to "develop literacy programs, such as Reading Recovery, to meet the needs of primary students and to ensure that their reading skills are advancing to proficiency level." Each year since 1997, ELIGP has provided funds to corporations and schools to support Reading Recovery and other early literacy interventions (OELI) throughout the state (Figure 1).

This report summarizes the studies used to reach these conclusions. The research reports developed as part of the project are cited in Box 1. (These reports are or will soon be available at http://www.indiana.edu/~iepc.) This report describes the program and research approach used to examine early reading programs, summarizes descriptive and predictive analyses of the differences between funded and non-funded programs, and makes recommendations for further improvement in early reading programs.

Box 1
The Following Related Technical Reports are Available Through the Indiana Education Policy Center

St. John, E., Bardzell, J., Michael, R., Hall, G., Manoil, K., Asker, E., & Clements, M. (1998). *Indiana's Early Literacy Intervention Grant Program Implementation Study.* Bloomington, IN: Indiana Education Policy Center.

Manset, G., St. John, E.P., Simmons, A., Michael, R., Bardzell, J., Hodges, D., Jacob, S., & Gordon, D. (1999). *Indiana's Early Literacy Intervention Grant Program Impact Study for 1997-98.* Bloomington, IN: Indiana Education Policy Center.

St. John, E. P., Bardzell, J. S. & Associates (1999). *Improving Early Reading and Literacy: A Guide for Developing Research-Based Programs.* Bloomington, IN: Indiana Education Policy Center.

Manset, G., St. John, E.P., Simmons, A., Michael, R., Bardzell, J., Hodges, D., Jacob, S., & Gordon, D. (2000). *Indiana's Early Literacy Intervention Grant Program Impact Study for 1998-99.* Bloomington, IN: Indiana Education Policy Center.

St. John, E. P., Manset, G., Hu, S., Simmons, A., & Michael, R. (2000). *Assessing the Impact of Reading Interventions: Indiana's Early Literacy Intervention Grant Program. Policy Research Report #00-01.* Bloomington, IN: Indiana Education Policy Center.

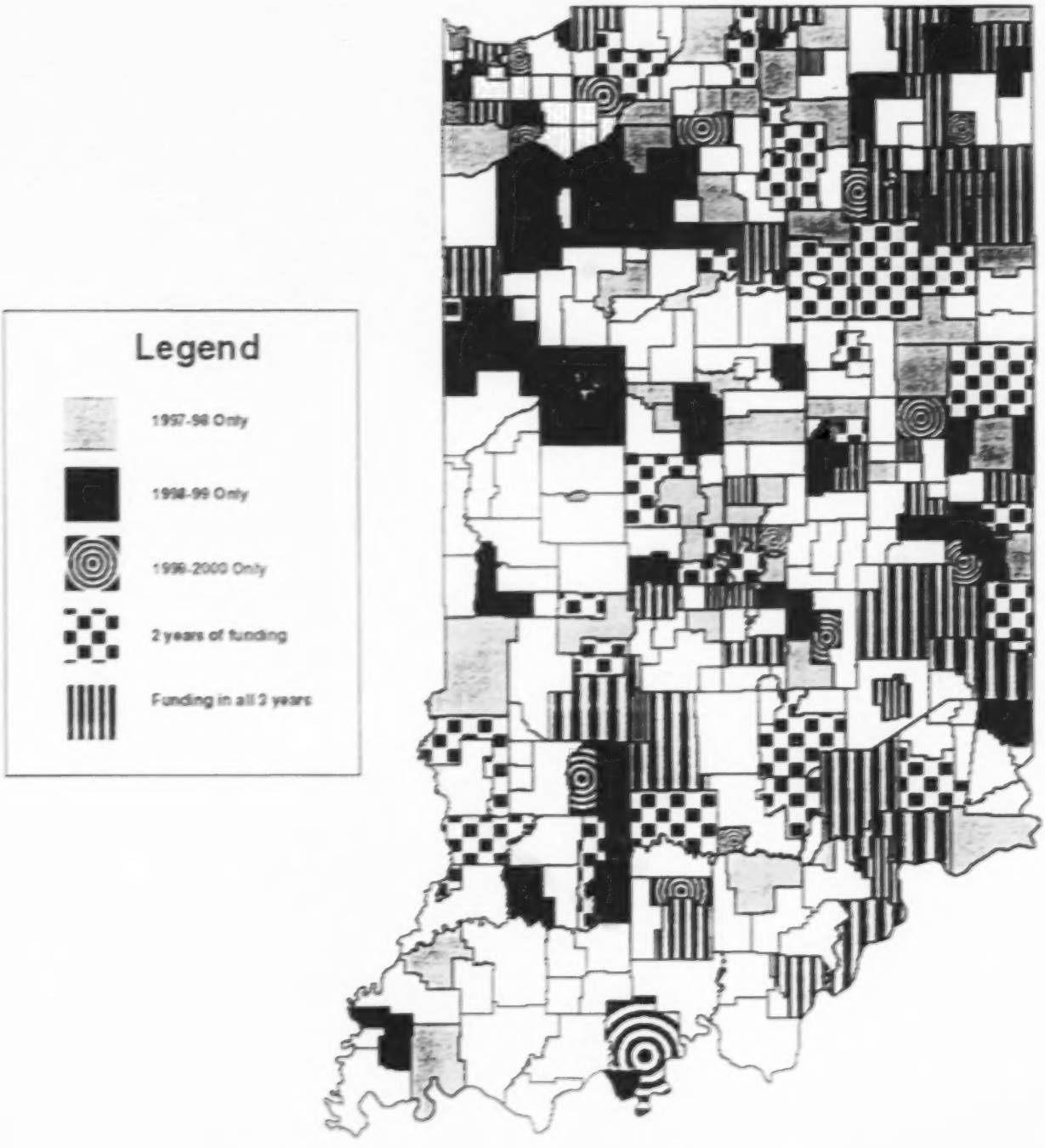
Manset, G., St. John, E. P., Jacob, S., Hodges, D., Manoil, K., Worthington, K., & Gordon, D. (Forthcoming). *Innovations for Reaching Readers at Risk: Case Studies of Indiana's Early Literacy Intervention Grant Program.* Bloomington, IN: Indiana Education Policy Center.

Manset, G., St. John, E., Chung, C. G., & Simmons, A. (Forthcoming). *An Evaluation of Trends in ISTEP+ Reading and Language Arts Scores for Indiana's Early Literacy Intervention Grant Program (Schools Funded 1997-1998).* Bloomington, IN: Indiana Education Policy Center.

St. John, E.P., Manset, G., Chung, C.G., & Simmons, A. (Forthcoming). *Research-Based Reading Interventions: The Impact of Indiana's Early Literacy Intervention Grant Program.* Bloomington, IN: Indiana Education Policy Center.

Manset, G., St. John, E. P., Simmons, A. B., Worthington, K., Chung, C. G., Manoil, K., (Forthcoming). *Indiana's Early Literacy Intervention Grant Program Impact Study for 1999-2000.* Bloomington, IN: Indiana Education Policy Center.

Figure 1
Indiana School Corporations with Funded Early Literacy Interventions 1997-00



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Program Implementation

Funding for Reading Recovery makes up a substantial portion of the ELIGP (Table 1). ELIGP provides funds that support the instruction of teacher trainers as well as Reading Recovery teachers. Reading Recovery is an intensive pullout, tutorial program targeting students in Grade 1 who are at-risk for reading failure. Students who are pulled out and provided services through Reading Recovery experience a combination of writing and reading activities designed to enhance their basic and strategic literacy skills. Teachers who provide services require extensive training to learn the diagnostic technique, instructional methods, and lesson sequencing processes used in the program. Reading Recovery was designed to reach the lowest 20 percent of students in a school's Grade 1 program. Purdue University provides education for teacher trainers and facilitates a network of teacher training sites across Indiana.

The OELI portion of ELIGP funds a combination of well researched "packaged" programs, such as Success For All, Four-Blocks Method, Literacy Collaborative, and locally designed projects that draw on early literacy theory and research. Funded projects vary in their focus—some target only Kindergarten students (referred to here

Table 1
Grant Amounts and Number of Projects, 1997-2000[1]

PROGRAM TYPE	AMOUNT STATE $	CORPORATIONS WITH	SCHOOLS WITH	ESTIMATED STUDENTS	
Reading Recovery trainers[2]	$1,151,482	19	*NA*		*NA*
Reading Recovery	$3,824,000	127	337	New	5,377[3]
				Ongoing	12,505[4]
				Subtotal	17,882[5]
Other Early Literacy Intervention[6]	$5,117,698	92	281		35,509[7]
Sub Total	$10,093,180	170[8]	525		59,744
Other[9]	$2,144,820				
Total	$12,238,000				

Notes:
1 Data reflect October 2000 updates from Indiana Department of Education.
2 The $1,151,482 for the training of 19 new Reading Recovery trainers (teacher leaders) was allocated directly to Purdue University, rather than to the school corporations.
3 The estimated number of students is derived from two sources. One question on the survey asks respondents to indicate the number of students who are served. This number was summed for the corporations/schools that returned surveys. For the corporations/schools that did not return surveys, the number of Reading Recovery teachers in training in these corporations was multiplied by 6 students per teacher. The number of students served for those corporations/schools returning surveys was added to the number calculated for corporations/schools not returning surveys to yield a grand total. Note that numbers may include students served by Reading Recovery teachers funded by sources other than the ELIGP.
4 The number of "ongoing" students was estimated by subtracting the number of new students served from the total number of students served in Indiana as reported by the Purdue University, Reading Recovery Project between the 1997-98 and 1999-00 school years. This number includes students served by Reading Recovery teachers whose training was supported by ELIGP and other sources.
5 This total was reported by the Purdue University, Reading Recovery Project.
6 Includes interventions other than Reading Recovery, including FDK = Full-Day Kindergarten, LC = Literacy Collaborative and other early literacy interventions.
7 For corporations/schools returning surveys, the estimated number of students was derived from the surveys. For corporations/schools not returning surveys, estimates of students served were drawn from grant applications.
8 Between 1997-2000, 525 *different* schools representing 170 different school corporations were funded by ELIGP. In this calculation, schools or corporations with more than one funded project were only counted once.
9 The remaining funds were used for demonstration projects, professional development and evaluation.

Sources: Early Literacy Intervention Grant Program Applications and Surveys, 1997, 1998, and 1999, and statistics provided by Indiana Reading Recovery Program at Purdue University.

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as OELI-K), for instance. Typically OELI-funded projects focus on Kindergarten through Grade 3 and are more comprehensive than Reading Recovery in the respect that they are classroom or school-wide services. Funds for OELI programs support the furthering of the technical expertise of teachers through workshops, networking and opportunities to collaborate. ELIGP funds also provide additional resources such as support staff and materials, curricular innovation, and educational programs for parents.

A total of $10,093,180 in grants was awarded to schools and corporations over the first three years of ELIGP funding, 1997-00 (Table 1). A sum of $1,151,482 was awarded directly to Purdue University for the funding of Reading Recovery trainers who serve in twenty school corporations.

A total of $3,824,000 supported Reading Recovery programs in 127 corporations and 337 different schools. An estimated 5,377 students received Reading Recovery instruction by teachers in training between 1997-2000 through the support of the ELIGP program. In addition, an estimated 12,505 received instruction from teachers trained by Purdue University, as a result of their ongoing efforts in schools between 1997-98 and 1999-00. The state's funding of training for Reading Recovery averaged about $711 per student during the training year. This number ($711) was estimated by dividing the training costs ($3,824,000) by the number of students. The estimate would be higher ($925) if the cost of training trainers was added in. However, if the students served by ongoing teachers with Reading Recovery training were considered, the average would be substantially lower. In addition, schools had other expenditures associated with Reading Recovery, including personnel.

The funds provided for both Reading Recovery and OELI programs were less than expenses associated with other common remedial options, such as grade retention and special education services.

Other early literacy interventions (OELI) were supported in 281 schools in 92 corporations with $5,117,698 in ELIGP grants over the three years. Whereas Reading Recovery programs target the lowest achieving 20 percent of students in Grade 1, OELI programs were typically more comprehensive and targeted whole classrooms or schools. OELI schools reported that approximately 35,509 students were served through funded projects. The costs for OELI programs funded by ELIGP over three years were approximately $144 per student. This estimate was derived by dividing the program expenditures ($5,117,698) by the estimated number of students served (35,509).

The ELIGP program funds interventions that can lead to long-term savings for taxpayers. The funds provided for both Reading Recovery and OELI projects were less than expenses associated with other common remedial options, such as grade retention and special education services. Each student retained in early primary grades costs the state and districts $4,387 in 1999-00. The average state cost for serving students identified as having a learning disability range from $1,522 to $2,577 a year. Once students are identified as having a learning disability, they will most likely receive these services every year until they graduate. These costs per student are

considerably more than those of Reading Recovery or retention in grade level. Thus funding through ELIGP can improve the economic efficiency of the state system if the funded intervention reduces the percentages of students who are retained or who need special education services.

Over the first three years of ELIGP, approximately 47 percent of Indiana's public elementary schools received funding for Reading Recovery or OELI projects, through ELIGP (Table 2). ELIGP was designed to support schools in their efforts to accelerate the literacy development of students, particularly those at-risk for reading failure. Schools with higher percentages of students from low-income backgrounds typically have lower overall reading scores, which means that targeting ELIGP funding on High-Poverty schools (with high percentages of students on free or reduced lunch) could increase overall literacy in the state. As a group, Funded Schools and Comparison Schools differed in the percent of students receiving free lunch, a common poverty indicator used when examining Indiana schools. While OELI and OELI-K schools were similar to Comparison Schools in the rate of students receiving free lunch, Reading Recovery schools on average had a significantly higher percentage of students receiving free lunch in their schools. Schools with a higher percentage of poverty, therefore, were receiving funding for Reading Recovery. This suggests that the ELIGP was meeting its goal of providing support to those students most at-risk for reading failure. Furthermore, any analysis of outcome data should take into consideration that Reading Recovery schools have students who, because of their background, will enter school less prepared to learn to read. This is compounded by the fact that large proportions of students who are at-risk in a school can tax the resources of literacy programs.

Reading Recovery schools were also significantly different than Comparison Schools in ISTEP+ scores. Overall, Reading Recovery schools receiving funding had students scoring significantly

Table 2
Funded and Comparison Schools as a Percentage of Public Elementary Schools in the State, 1997-2000[1]

	Year	Funded	Percent of Public Elementary Schools[2]
Counts	1997-98	264	23.38
	1998-99	274	24.27
	1999-00	202	17.89
Total number of unique funded schools over three years (1997-2000)[3]		525	46.50

Notes:
[1] Numbers in this table do not necessarily match those in previous reports. The numbers in this table reflect October 2000 data base updates from the IDOE.
[2] The percentage of public elementary schools is the quotient of the number of funded schools and the total number of public elementary schools (1129) that were operating in 1999-2000.
[3] Between 1997-2000, 525 different schools were funded by ELIGP. In this calculation, schools or corporations with more than one funded project were only counted once.

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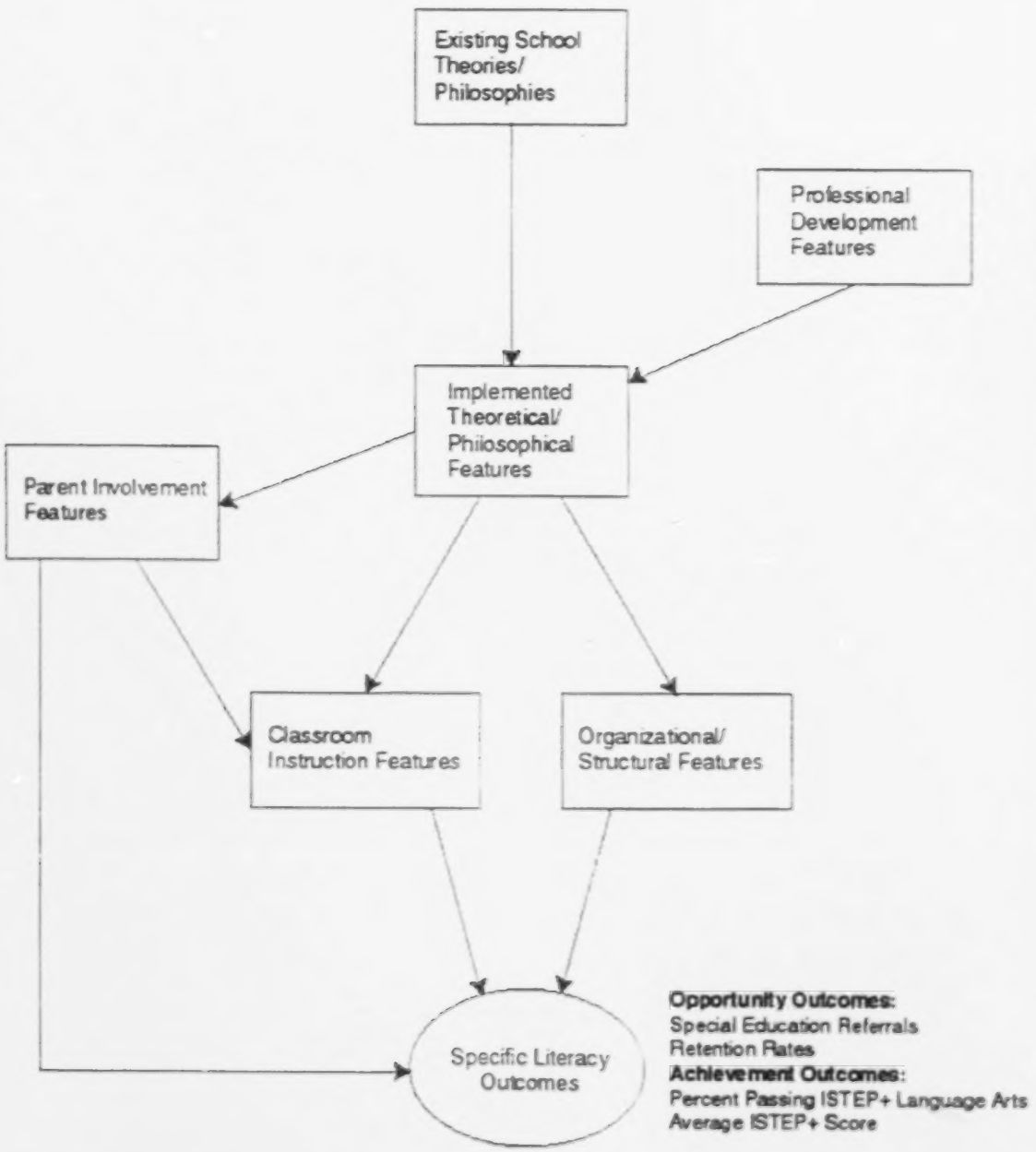
lower than Comparison Schools on the English/Language Arts Scale score. The Funded Schools demonstrated a greater need for improvement in literacy skills prior to the receipt of ELIGP funding.

Evaluation Approach

A framework that distinguished among diverse types of program features that could influence early literacy guided the three-year

Figure 2
Framework for Assessing Early Literacy Interventions



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Four Blocks Method

A Grade 3 teacher who currently uses Four Blocks in her classroom illustrates how this philosophy is implemented by saying, "Right now what I do each day with my class: we start with approximately a 40- minute period. It is a writing period. Children write narratives and stories that go with what they are reading in their books. We use the writing process with all the steps. The second block of time is reading with the basal series. We do a lot of reading. We do a lot of phonics and vocabulary study [and] reading the story work (that deals with reading text book). The third block of time is making words; we use Patricia Cunningham's making big words book. The boys and girls have cards that they work with; I will tell them to spell a word, and they spell it in a tray. We switch letters making new words. This ties in with their spelling each week. The fourth block of time is individual reading. We have four baskets of approximately a hundred books each. Students go to the basket that is on their table and choose a book to read and fill out a paper with questions about their book."

-From Four Blocks Method Case Study

evaluation study (Figure 2). A new approach was needed because the types of reading interventions that were funded sometimes included similar features, but many also included distinctive features. Further, many of the features in funded programs may already have been implemented in some funded and non-funded schools. The conceptual framework distinguished between five types of program features: organizational/structural, theoretical/philosophical, instructional, professional development, and parent involvement (Figure 2). This framework was used to identify different program features, as well as link program features to possible outcomes. Three specific outcomes were considered in our analyses:

- *Special Education referral rates* (for Grades K through 3) can be reduced if more children learn to read. Given the costs of special education assessment and the provision of services through special education, reading interventions that reduce referral rates result in increased efficiency of the entire educational system.
- *Retention rates* for early elementary (Grades K through 3) can also be reduced if more children learn to read. Given that each student retained adds the equivalent of one year of educational costs to education and increases the chances of drop out, interventions that reduce retention rates increase the efficiency of the educational system.
- *Passing rates* on reading achievement tests (ISTEP+) can be increased if more students obtain minimum competency in reading. Increases in passing rates indicate increased effectiveness of the educational system in its capacity to teach all children to read. The impact of the ELIGP was determined through changes in program features and outcomes.

Study Methods

This report summarizes the results of three surveys of Funded and Comparison Schools (for the 1997-98, 1998-99, and 1999-2000 school years). The response rates for the surveys are summarized in Table 3. The descriptive analyses of change were included in three separate evaluation reports. This report presents the summary of an analysis of change using the results of all three surveys, along with regression analyses from all three years. Change in ISTEP+ scores are also

Table 3
Number and Response Rate of Surveyed Schools

	Funded	Comparison	Total
1997-1998			
Surveyed	262	351	613
Responded	167	182	349
Rate	64%	52%	57%
1998-1999			
Surveyed	289	359	648
Responded	170	108	278
Rate	59%	30%	43%
1999-2000			
Surveyed	186	373	459
Responded	147	133	280
Rate	79%	36%	61%

Notes: Some schools were funded or received a survey in more than one year.
[2]The number of Funded Schools represents the schools funded at the outset of the school year. Some other schools were added/deleted to the list of Funded Schools after this list was transmitted..

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The descriptive analysis of program features and outcomes reveals that Indiana's elementary schools had a balanced approach to reading that was enhanced by ELIGP funding.

reported using an effect size analysis. In addition, case studies of seven ELIGP program schools provided qualitative information related to successful implementation of early literacy reforms.

Analyses of Program Features and Outcomes

One way that educational programs are commonly evaluated is to compare the implemented features in Funded and Comparison Schools, along with the outcomes of both types of schools. When changes in programs and outcomes are significant statistically then it is possible that the interventions were the source of the changes. The descriptive analysis of program features and outcomes reveals that Indiana's elementary schools had a balanced approach to reading that was enhanced by ELIGP funding.

Indiana's Balanced Approach

Indiana's balanced approach to early reading instruction (illustrated in Figure 3) provides a solid foundation in early reading for most children. Indeed, Indiana has historically ranked high nationally on early reading achievement in the National Assessment of Educational Progress. Both Funded and Comparison Schools made frequent use of in-service workshops, networking, and collaboration for reading improvement. They also had a balanced philosophy that had near equal emphasis on:

- Child Centered/Developmental and Prescribed/Systematic Instruction,
- Code/Phoneme Emphasis and Meaning/Comprehension Emphasis, and
- Code/Phoneme Taught Within vs. Outside of Context.

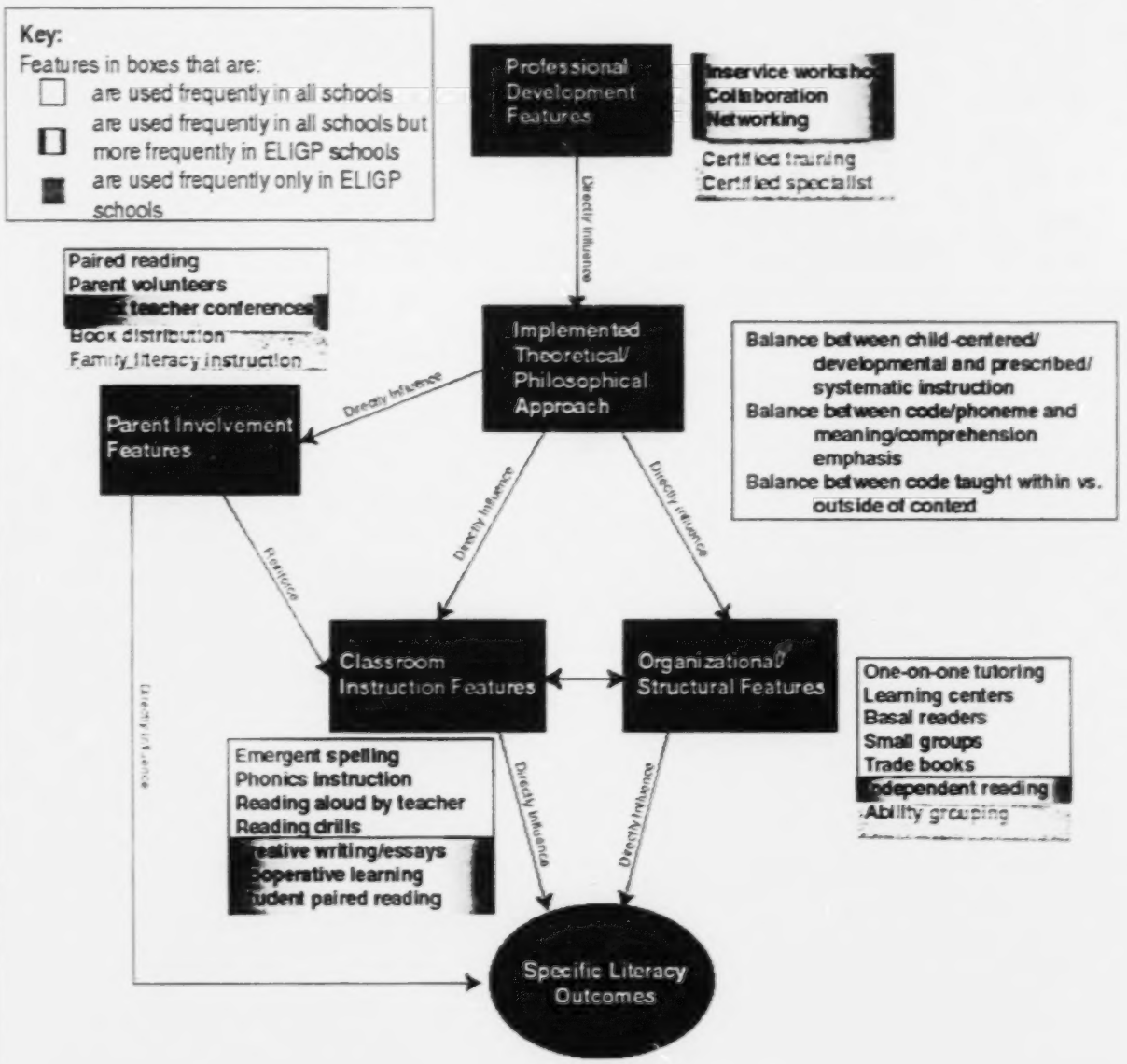
In addition, the majority of Indiana's schools made frequent use of paired reading between parents and children, parent-teacher conferences, and parent volunteers. This parental involvement provides an important way of enhancing learning opportunities for school children.

Both Funded and Comparison Schools also made frequent to daily use of creative/essay writing, emergent spelling, phonics instruction, reading aloud, and reading drills, a combination of methods that address the complexity of literacy acquisition. The common organizational and structural features included frequent to daily use of basal readers, independent reading, small groups, and trade books, reflecting both systematic and holistic approaches. This combination of approaches addresses all aspects of early reading acquisition.

However, like most states, Indiana has recognized the need to improve its early literacy program. In particular, Indiana has a growing number of students referred to special education each year. In addition, urban and rural schools have low percentages of students who obtain a minimum competency in reading, based on percentages of students who pass Grade 3 ISTEP+ reading achievement texts.

Figure 3

Summary of Findings from the 1997-2000 ELIGP Surveys
Grades K-3



Professional Development and Parent Component features:
Schools were asked to answer Yes or No for individual features. The inclusion of each feature as "used frequently" indicates that more than half of respondents indicated Yes.

Classroom Instruction and Organizational/Structural features:
Respondents were asked to indicate frequency of use on a 5-point scale. Features considered as "used frequently" were used often to every day (mean between 4.0 [Often] and 5.0 [Every Day]).

Implemented Theoretical/Philosophical features:
Teachers were asked to indicate their philosophies on a 5-point scale, which forced them to decide between two opposing philosophies. Responses near the center (2.5 – 3.5) were considered balanced.

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ELIGP Enhances Reading in Elementary Schools

ELIGP funding enhanced the early reading programs in Indiana's schools in some important ways (Figure 3). Specifically, the comparison of Funded and Comparison Schools revealed that:

- Funded Schools had more extensive professional development related to early literacy, including certified training, certified specialists, collaboration, networking, and in-service preparation.
- Funded Schools had more parent involvement in reading, including more parent conferences, book distribution, and family literacy instruction.
- Funded Schools had a more diverse approach to instruction including a higher frequency of creative/essay writing, cooperative learning, and student paired reading.
- Funded Schools also developed organizational features that increased the systematic and individualized nature of early literacy instruction, including the addition of ability grouping and more independent reading.

The ELIGP-Funded Schools also had significantly different literacy related outcomes than Comparison Schools. These included:

- A larger number of students completed Reading Recovery lessons in schools funded through ELIGP than those with Reading Recovery and no ELIGP funds.
- Special education referrals were significantly lower in OELI schools than in Comparison Schools.
- Retention rates were also significantly lower in OELI schools.

These descriptive findings indicate a consistent pattern of improvement. ELIGP enabled schools to implement features that appear to have had a direct influence on improvement in opportunity related outcomes—reductions in special education referral and retention rates that relate directly to improvements in system efficiency. However, these descriptive analyses of change do not indicate causality, nor do they explain which programs resulted in improvement.

Analysis of Program Effects

Another approach to the assessment of the effects of reading interventions, such as Success For All, is the analysis of "effect size" for the percentage of students who passed reading achievement tests in Grade 3. One of our analyses used this approach to assess the impact of four of the major national programs funded through ELIGP: Reading Recovery, Success For All, Literacy Collaborative, and Four Blocks Method. This method of analysis involves estimating the effect of the interventions in terms of a standardized variable between two measures. This analysis focuses on the impact of different types of early literacy programs whether or not they were funded through ELIGP. The analyses reveal whether there were statistically significant differences in outcomes for schools with intervention programs compared to schools in the control group. The analysis does not confirm that the program actually caused the differences in outcomes.

This approach was appropriate because many schools found funding sources other than ELIGP to implement some of these reading interventions. Further, this type of analysis

Success For All

Every day there were 90 minutes of reading at this school. A Grade 2 teacher talked about this time by saying, "There can be no interruptions, no speakers, no assemblies, nothing during our reading time. The children, I think, are not as frustrated because they know everyone in my class has my individual attention that 90 minutes." Many of the teachers wished that math was also always taught at the same time each day without interruptions. They believed that the school would probably move in this direction. One teacher believed that the structure of Success For All helps children be successful. She said, "Success For All is good for at-risk children. It's very much you do the same things at the same time every day so the children know what to expect. There is a lot of cooperative learning with it. There is homework every day with it, [and] a lot of writing. A Kindergarten teacher expanded upon this idea of the structure of Success For All by saying, "I think organization and repetition is something that is lacking for a lot of these kids and that program really has it. I think they need a lot of structure and they don't get structure. This program is definitely structured and I think it is good for them."

-From Success For All Case Study

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helps build an understanding of which types of programs merit further funding. The analyses for the entire population, along with separate analyses of Low-Poverty and High-Poverty schools, are summarized below. The quartile of the sample with the highest percentages of students on free and reduced lunch was classified as High Poverty, while the quartile with the lowest percentages on free and reduced lunch was classified as Low Poverty.

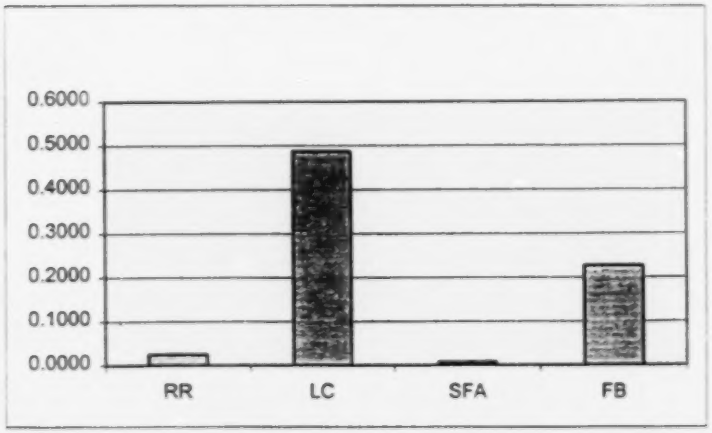
Passing Rates Across All Schools

Schools that identified having at least one of four early literacy interventions were compared with schools without specific interventions. This method compares the outcomes (increase in passing rates) with the intervention programs and comparison schools, but does not provide statistical controls for many of the factors that can influence this outcome. In this analysis (Figure 4), neither Reading Recovery nor Success For All had significant effects. Literacy Collaborative, a comprehensive, school-wide approach to reading intervention supported by Purdue University had moderate effects (between .5 and .7). Another, Four Blocks Method, a balanced approach to reading instruction that has been promoted through workshops offered by the IDOE, had a small effect (between .2 and .4). That is, schools with Literacy Collaborative and Four Blocks Method both made significant gains in passing rates on the ISTEP+ reading test.

Passing Rates in Low-Poverty and High-Poverty Schools

One way to introduce some statistical control into the analysis of effect sizes is to break down the population into groups across important variables. Therefore we examined effect sizes in both Low-Poverty and High-Poverty schools because poverty has a

Figure 4
"Effect Sizes" Associated with Change in Passing Rates for Reading Recovery and Other Early Literacy Intervention Programs- Schools Overall

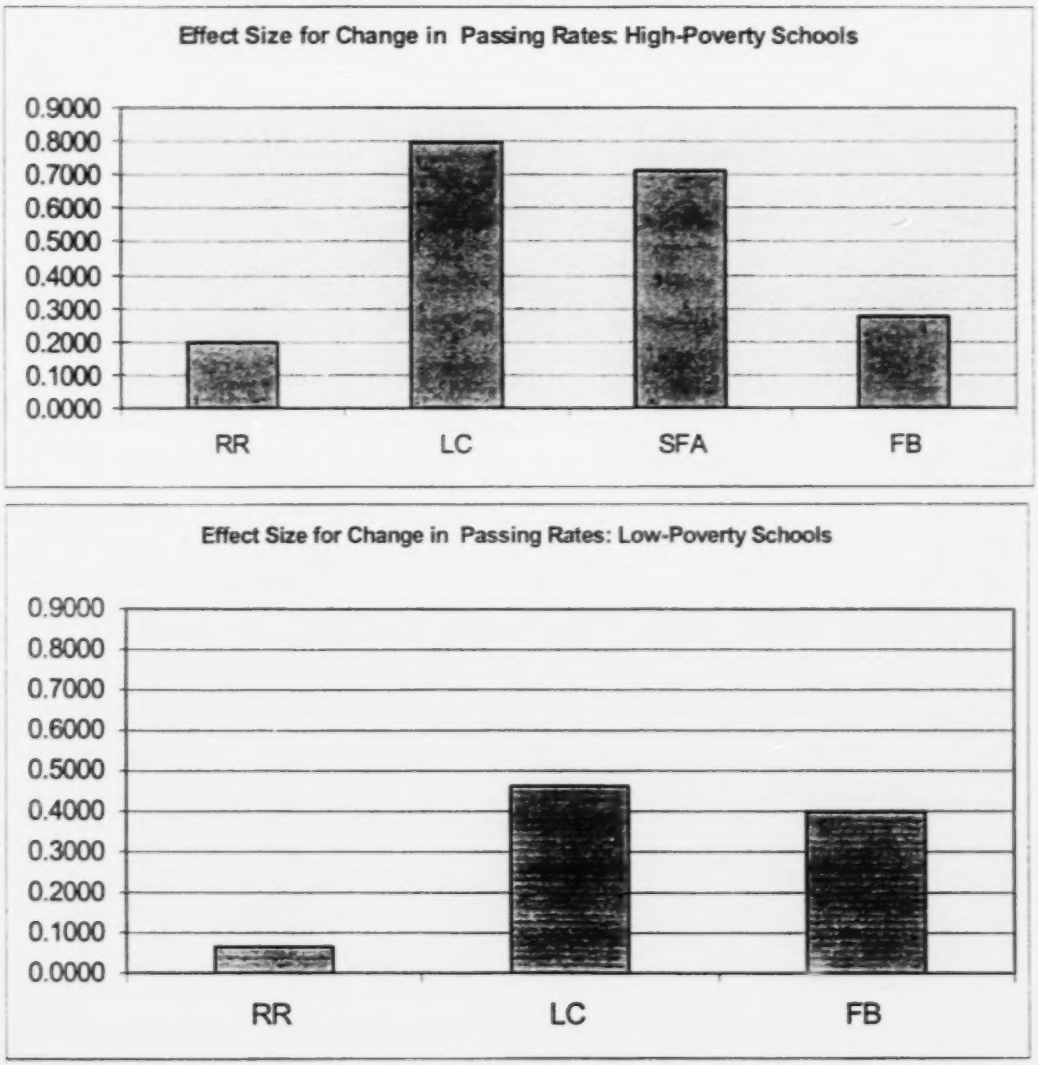


Effect size of gains in passing rates is relative to control schools reporting no early literacy programs at their school. Small Effects .2-.4, Moderate Effects .5-.7, Large Effects .8 and above.
RR = Reading Recovery, LC = Literacy Collaborative, FB = Four Blocks Method.

substantial effect on achievement in schools (Figure 5).

In this analysis, both Reading Recovery and Four Blocks Method had small effects in High-Poverty schools, while Success For All and Literacy Collaborative had moderate effects. This indicates implementation of these programs helped schools increase the percentage of children who learned to read by Grade 3. These findings seem reasonable since Success For All was designed as an intervention to improve early reading in schools with large percentages of students in at-risk situations, and Literacy Collaborative

Figure 5
"Effect Sizes" Associated with Change in Passing Rates for Reading Recovery and Other Early Literacy Intervention Programs by Poverty Level of School



Low-Poverty Schools were in the quartile with the lowest percentages of student on free or reduced lunch. High-Poverty Schools were in the quartile with high percentages of students on free or reduced lunch. Effect Size of gains in passing rates is relative to control schools reporting no early literacy programs at their school. Small Effects .2-.4, Moderate Effects .5-.7, Large Effects .8 and above. No Low-Poverty Schools reported having SFA, therefore it was not included in the analysis of that group. RR = Reading Recovery, LC = Literacy Collaborative, FB = Four Blocks Method.

This indicates implementation of these programs helped schools increase the percentage of children who learned to read by Grade 3.

was designed to complement Reading Recovery, which is frequently implemented in High-Poverty schools. Further, this analysis also reveals that two of the intervention approaches had moderate effects in Low-Poverty schools: Literacy Collaborative and Four Blocks Method.

The fact that the effects of programs appear different in the presence of statistical controls for poverty reveals the limitations of effect size analysis. If introducing one control variable changes the results, then what impact would the introduction of a full and appropriate set of control variables have on these findings? We conducted a complete set of regression analyses to provide a more complete analysis of program impact.

Predictors of Literacy Outcomes

To more fully assess the impact of the reading interventions on literacy outcomes, a factor analysis and a series of regression analyses were completed, adapting the logic of the analytic framework used in the study. Then, regression analyses examined the impact of school characteristics, intervention type, professional development, parent involvement, and instruction and related factors on three outcomes: special education referral rates, retention rates, and passing rates on achievement tests. First the factor analysis of instructional and organizational/structural features is summarized, then each of the regression analyses is summarized.

Instruction and Related Factors

Factor analysis provides a statistical method for discerning variables that are closely related and have a statistical coherence. Usually factors that converge statistically also share a logical relationship, which is the case with the five factors identified from the analysis of program features related to instructional and organizational/structural aspects of early literacy instruction. Indeed, the factors represent common patterns of classroom practice. The Instruction and Related Factors were:

- *Connected-Text Approaches*: A factor that combines independent reading, cooperative learning, creative/essay writing, emergent spelling, paired reading (student to student), and reading aloud. The Connected-Text Approaches factor involves readers in the creative and communicative aspect of learning to read through appreciation of language and text. This pattern of classroom practice reflects a focus on whole text and higher order cognitive skills, which in turn is related to greater reading fluency and comprehension.
- *Explicit/Direct Approaches*: A factor that combines basal readers, phonics instruction, reading drills and worksheets/workbooks. Explicit/Direct Approaches to literacy instruction emphasize skills-based approaches to early reading acquisition.
- *Child-Centered/Expressive Approaches*: A factor that combines child-initiated learning centers, Big Books, cooperative learning, and drama. Child-Centered/Expressive Approaches to literacy instruction involve students in creative and self-

expressive processes that promote learning about texts through personal experience.

- *Ability-Group/Pullout Approaches*: A factor that combines ability grouping, one-to-one tutoring, pullout instruction, and small groups. Ability-Group/Pullout Approaches involve identifying children who have learning needs and giving them special instruction, while accelerating the learning for students with more advanced skills.
- *Trade Books Approaches*: This factor combines trade books and Big Books, but de-emphasizes basal readers. The Trade Books Approaches factor focuses on providing stories and literature that are interesting to children as a means of motivating interest in reading and promoting the acquisition of reading skills through literature texts.

These factors represent common patterns of professional practice in early reading. Using these factors in the regression analyses had the advantage of combining sets of variables that were used in combination, as quasi-integrated sets of reading strategies. The regression analyses, described below, used these Instruction and Related Factors as predictors of literacy related outcomes, along with variables related to other forces that influence the development of reading skills.

It should be noted that there was a relationship between the types of interventions and the patterns of classroom practice, as measured by the factors (Figure 6). Most schools that reported they have reading reforms (Success For All, Reading Recovery, Literacy Collaborative, Full Day Kindergarten, Four Blocks, Literacy Groups, and other locally developed programs) reported greater frequency of use of practices included in two or more factors or patterns of practice. Thus, measurable effects of these programs in

Figure 6

Relationship between Reading Reforms and Frequency of Patterns of Practice Reported by Schools*

Program	Connected-Text Approaches	Explicit/ Direct Approaches	Child-Centered/ Expressive Approaches	Ability-Group/ Pullout Approaches	Trade Book Approaches
Reading Recovery	+	-		+	
Success For All	+	-		+	-
Literacy Collaborative	+	-	+	+	
First Steps					
Accelerated Schools					
Four Blocks	+	-		-	+
Literacy Groups	+	-		+	
Early Success					
Other Locally Developed Pgm.	+		+	+	
No Program (Comparison)	-			-	

+ Significant and positive Pearson correlation
- Significant and negative Pearson correlation

*Patterns of Practice as measured by analysis of instruction and related factors (discussed in text).

the regression analysis summarized below are related to the combination of practices included in these reforms rather than to the effects of any single factor of intervention.

Two of the funded programs were not significantly associated with differences in the frequency of any of the instruction and related factors (First Steps and Early Success). In addition, Accelerated Schools which was used by some schools, but not funded by ELIGP, was not significantly associated with any of the factors. Other schools in Indiana that did not receive funding and that had none of the funded programs ("No Program" in Figure 6) reported a less frequent use of Connected-Text and Ability-Group/Pullout Approaches.

The regression analysis examined the effects of program types, controlling for other variables in the model (Table 4). The results of these analyses are summarized below.

Predictors of Special Education Referral

The analysis of predictors of special education referral rates reveals that several of the funded program types had a direct influence on special education referral rates, controlling for other variables that influence literacy outcomes (Figure 7). Two school characteristics had an influence on special education referral. Schools with higher test scores had lower referral rates, and schools with higher percentages of students with low incomes had higher special education referral rates.

Four types of interventions were associated with referral rates, controlling for other important variables:

- Success For All was associated with lower special education referral;
- Literacy Collaborative was associated with lower special education referral;
- First Steps were associated with lower special education referral; and
- Four Blocks Method was associated with higher special education referral.

Two other variables were significantly associated with special education referral. Having a family literacy program, a process of intro-

Table 4
Variables Assessed for Their Influence on Literacy Outcomes

School characteristics
- ·ISTEP Reading Raw Score (Prefunding)
- ·% Free or Reduced Lunch
- ·% Minority

Intervention Type
- ·Reading Recovery
- ·Success For All
- ·Literacy Collaborative
- ·Full-Day Kindergarten
- ·Even Start
- ·Accelerated Schools
- ·Four Blocks Method

Professional Development
- ·Required Certified Training for Teachers
- ·Certified Specialist (specialist comes to school and trains teachers)
- ·In-service Workshops
- ·Networking
- ·Opportunity for Collaboration

Parent Involvement
- ·Book Distribution
- ·Family Literacy (Parent Education)
- ·Paired Reading (Parent/Child)
- ·Parent Conferences
- ·Parent Volunteers

Instructional and Organizational/ Structural Features (Factors)
- ·Connected-Text Approaches
- ·Explicit/Direct Approaches
- ·Child-Centered/Expressive Approaches
- ·Ability-Group/Pullout Approaches
- ·Trade Books Approaches

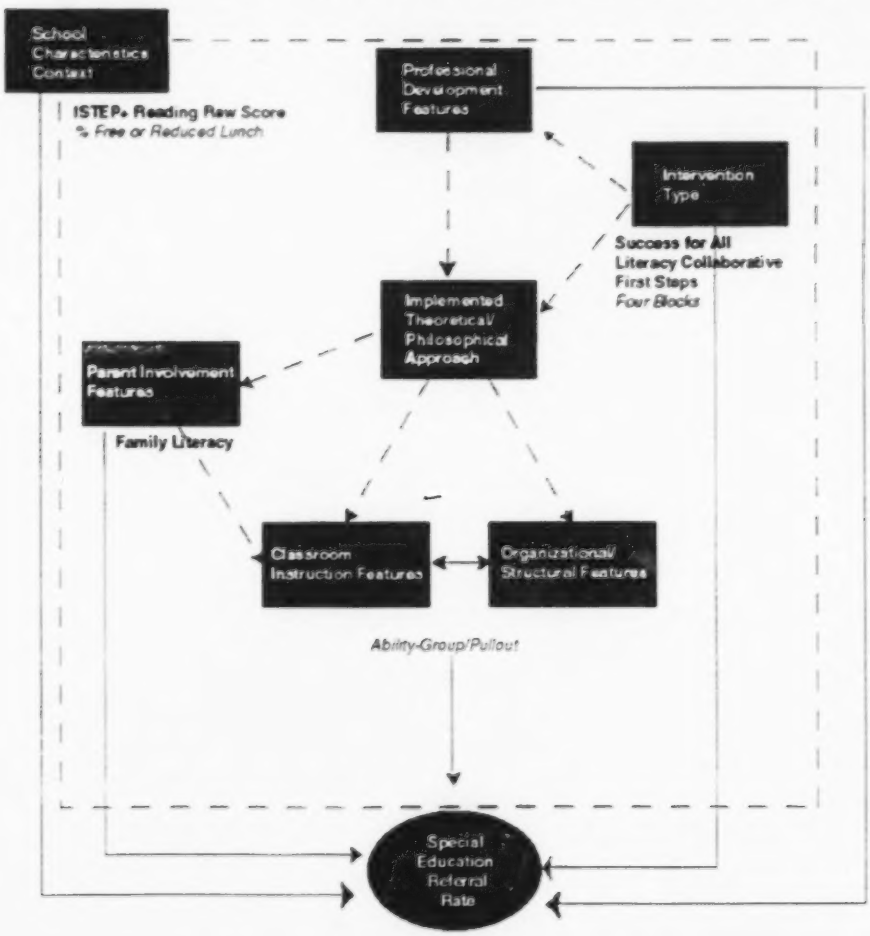
ducing reading into homes where parents lacked literacy skills, was associated with lower special education referral.

Further, having a high factor score on Ability-Group/Pullout Approaches was associated with higher special education referral. The variables associated with Ability-Group/Pullout could have the effect of pulling low-achieving students out of the classroom and slowing their progress compared to their peers, or the mere structure of Ability-Group/Pullout may contribute to over-referral of students. This factor should not be equated with the Reading Recovery and Literacy Collaborative programs which have had positive or neutral effects in the same analysis.

Predictors of Retention Rates

The specific types of interventions that schools implemented were less important in predicting grade level retention than were the instructional factors (Figure 8). The percentages of

Figure 7
Predictors Contributing to Special Education Referral Rates



Ability-Group/ Pullout Combines:

- *Ability Grouping*
- *One-to-One Tutoring*
- *Pullout Instruction*
- *Small Groups*

Bold type indicates that this variable associated with lower special education referral rates.
Italic type indicates that this variable associated with higher special education referral rates.

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low-income students and minority students, along with being located in a rural corporation, increased referral rates. Two of the funding programs had a statistically significant association with retention:

- Reading Recovery was associated with lower grade retention rates.
- Success For All also was associated with lower grade retention rates.

Providing teachers with an opportunity to collaborate also reduced retention rates, possibly because collaboration among teachers within grade levels allowed teachers to meet more diverse learning needs within the regular structure. Paired reading between parents and children decreased retention.

In addition, three of the Instruction and Related Factors were signifi-

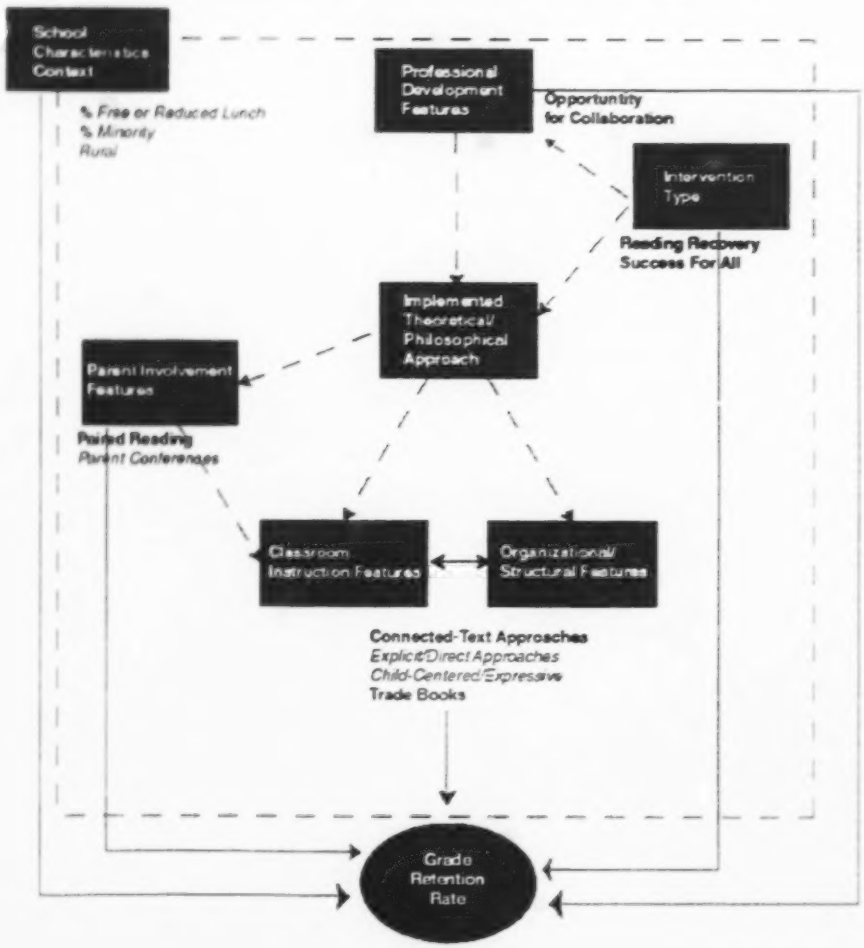
Connected-Text Approaches Combine:

- *Independent Reading*
- *Cooperative Learning*
- *Creative/ Essay Writing*
- *Emergent Spelling*
- *Paired Reading*
- *Reading Aloud*

Trade Books Approaches Combine:

- *Trade Books*
- *Big Books*
- *Deemphasis on Basal Readers*

Figure 8
Predictors Contributing to Grade 1-3 Retention Rates



Bold type indicates that this variable decreases grade retentions.
Italic type indicates that this variable increases grade retentions.

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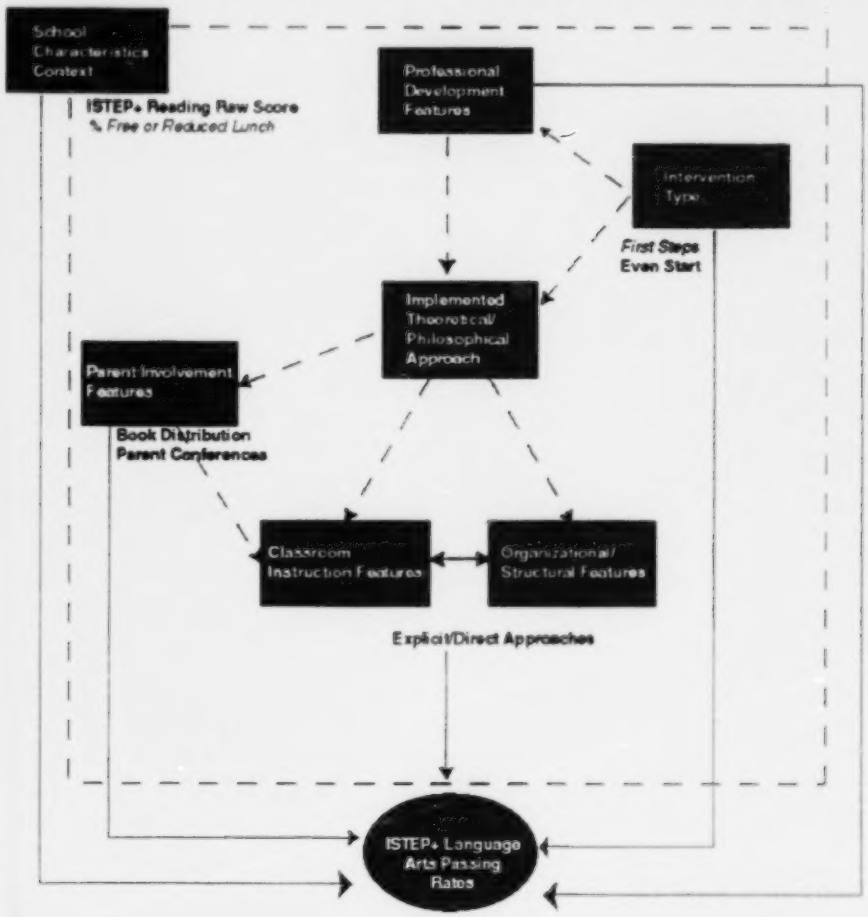
Figure 9
Predictors Contributing to ISTEP+ Language Arts Passing Rates



Explicit/ Direct Approaches Combine:

- *Basal Readers*
- *Phonics Instruction*
- *Reading Drills*
- *Work-sheets / Work-books*

Bold type indicates that this variable increases passing rates.
Italic type indicates that this variable decreases passing rates..

cantly associated with retention rates:

- Connected-Text Approaches were associated with lower grade level retention;
- Explicit/Direct Approaches were associated with higher retention rates;
- Child-Centered/Expressive Approaches were associated with higher retention rates; and
- Trade Book Approaches were associated with lower retention rates.

Predictors of ISTEP+ Passing Rates

Two school characteristics were significantly associated with passing rates (Figure 9). High reading scores were positively associated with higher passing rates, while the percentage of low-income students was associated with lower passing rates. Controlling for these and other variables, two types of funded interventions were significantly associated with retention:

- First Steps was negatively associ-

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In combination, these findings indicate that a comprehensive approach is necessary in the development of early literacy interventions.

ated with higher passing rates (but only after controlling for instructional factors, indicating this was a suppressed negative associated with high usage of Explicit/Direct Approaches); and

- Even Start was positively associated with passing rates.

Parent involvement had a substantial influence as well. Book distribution and parent conferences were positively associated with passing rates.

One of the factors was statistically significant. Explicit/Direct Approaches were associated with higher passing rates. This indicates that direct approaches are an important part of a balanced reading program.

Understanding Literacy Improvement

These analyses reveal that reading improvement is a complex process. Poverty, as measured by the percentage of students on free and reduced lunch, was a consistent predictor of literacy related outcomes. Several types of interventions have an influence on improving literacy outcomes:

- Reading Recovery was associated with reduced grade-level retention as well as a small effect on gains in ISTEP+ passing rates in High-Poverty schools.
- Success For All was associated with lower special education referral and grade-level retention and moderate effects on gains in passing rates in ISTEP+ in High-Poverty schools.
- Literacy Collaborative was associated with reduced special education referral, and also with moderate effects on ISTEP+ passing rates in both High and Low-Poverty schools.
- First Steps were associated with high special education referral, but also with higher passing rates on reading achievement tests.
- Even Start was associated with reduced passing rates on reading achievement tests.
- Four Blocks Method was associated with both higher special education referral and small effects on ISTEP+ passing rates in both High and Low-Poverty schools.

Thus, when regression analysis was used to control for the influence of other variables that influence literacy outcomes, Reading Recovery, Success For All, Literacy Collaborative, First Steps, and Even Start were associated with improvement in literacy outcomes. Clearly these programs merit further funding. The evidence in the regression is not as supportive or compelling for Four Blocks Method, although the analysis of effect size indicates Four Blocks improves ISTEP+ passing rates.

In addition, this study has provided insight into the types of instructional practices that can improve literacy outcomes. Specific findings include:

- Connected-Text Approaches reduce retention rates.
- Explicit/Direct Approaches increase passing rates on achievement tests, but increase retention rates.
- Child-Centered/Expressive Approaches increase retention rates (a finding that needs further exploration).

- Ability-Group/Pullout Approaches increase special education referral.
- Trade Books Approaches decrease special education referral.

In combination, these findings indicate that a balanced approach is necessary in the development of early literacy interventions. The fact that Explicit/Direct Approaches increased passing rates for tests means that they should be included, but since these approaches also increase grade level retention they probably should not be overemphasized. Since Connected-Text Approaches improve retention rates, they provide an appropriate balance to Explicit/Direct Approaches. In addition, the use of Trade Books can also provide balance to the use of basal reading systems that are used in Explicit/Direct Approaches. However, trade books and related methods should not be used in lieu of explicit/direct methods.

In addition, a few of the Instruction and Related Factors appear problematic and need to be carefully considered when designing early reading programs. Specifically, Child-Centered/Expressive Approaches and Ability-Group/Pullout Approaches should be viewed with caution, especially if they are not linked to a comprehensive set of instructional practices (e.g. Success for All, Literacy Collaborative, Reading Recovery). The Child-Centered/Expressive Approaches may promote child language development but in combination do not seem to support early reading acquisition. Further, the organizational methods used in the Ability-Group/Pullout Approaches seem to contribute to higher referrals for special education assessment.

Given the overall significance of the approaches in the regression analyses, it is evident that locally designed interventions also had an influence on literacy outcomes. Indeed, supplemental regression analyses reveals that OELI funding had a substantial direct influence, further reinforcing the conclusion that locally developed programs also had an impact. Further, these correlations (Figure 6) reveal locally developed interventions used comprehensive approaches.

How Can Schools Improve Early Literacy?

These statistical analyses, supplemented by the analysis of case studies of selected literacy programs, suggest strategies that schools can use to organize and implement their literacy improvement efforts. To improve the chances of success with the design and development of an early literacy program, schools should consider the following strategies:

- *School-wide Buy In*: The case studies reveal strong positive attitudes about the intervention programs. Further, many teachers spoke about the importance of having all teachers support and believe in the intervention process. Planning teams from schools should systematically study alternative intervention approaches and encourage open discussion of alternatives before selecting, or designing, a particular approach.
- *Professional Development*: The professional development component of early interventions is crucial. Further, the descriptive analyses indicated that schools with ELIGP programs were more likely to have ongoing professional development that included an emphasis on networking and collaboration in the implementation

Parents as Partners

These teachers, with the assistance of the former principal, looked at a program designed by the local school corporation that sent books home on a regular basis for parents to read with their children. From this beginning the Kindergarten team began to develop materials that could be easily transported between home and school. The teachers continued the program to the best of their ability, but as one of the Kindergarten teachers reportedly told the school board, "Our books were increasingly being listed as out of print and our bags were in need of repair or replacement." The teachers also wanted to be able to provide information for parents on how to read to their youngsters, recommend titles of books written in particular genres or by particular authors, and provide suggestions for specific questions and activities they could do with their child for each book. Through the Early Literacy Grant the team was able to update their materials, prepare, design, and print brochures, conduct staff development in the area of reading, and conduct workshops for parents throughout the school year.

The other Kindergarten teacher related a discussion she had with a parent. "I've had some parents say, 'I was tired and reading the book and my child says, 'have you asked me all the questions and have we done all the activities?'" This teacher continued, "Hopefully, the family by working together will come closer together. There is so much talk about involvement with your children. But it is hard to be imaginative when you are tired. Some of the activities are actually something you can make and can do these things with mom and dad and they be into language."

-From the Parents as Partners Case Study

This combination of analyses provides compelling evidence that the types of interventions funded through ELIGP improved literacy outcomes in Indiana's elementary schools.

of the new programs. In selecting and designing literacy interventions, schools need to examine whether the programs offer the ongoing professional development opportunities they need to be successful in the intervention.

- *Parent Involvement*: The descriptive analyses revealed more substantial parent involvement in Funded Schools. Analysis of the predictors of early literacy outcomes also found that paired reading by parents with their children and the distribution of literature books to homes improved reading outcomes in schools. Further, in the case study schools, teachers frequently spoke about the importance of involving parents in their reform efforts. Therefore, when planning teams in schools review and discuss possible intervention strategies, they should examine how the intervention would improve parent involvement.
- *Comprehensive Interventions*: Comprehensive school-wide interventions were consistently linked to improvement in literacy outcomes. In addition, the features included in comprehensive reforms such as Success For All and Literacy Collaborative include the instruction and related features that have a positive influence on improvement in literacy outcomes. Thus, schools should either select packaged interventions with comprehensive approaches or emphasize using comprehensive, school-wide approaches if they develop their own intervention program.
- *A Balance Between Explicit/ Direct and Connected-Text Approaches*: While the predictive analyses confirm that Explicit/ Direct Approaches, including phonics instruction, were associated with the percentage of students passing ISTEP+, these strategies were also associated with retention in grade level, in part because they are not as engaging for some students who have trouble learning to read. In contrast, Connected-Text Approaches to literacy instruction were more successful at enabling students to make progress in reading precisely because they enhance reading fluency and comprehension, and are more interesting and engaging for many students. Thus, schools should evaluate alternative approaches to literacy improvement to determine whether they would enhance the balanced approach they use.
- *Adaptable and Engaging Learning Environments*: It is crucial that early literacy interventions enable teachers to meet the learning needs of all students. For example, the combination of Reading Recovery and Literacy Collaborative provides an adaptable approach that supports children in the regular classroom, as well as children who have special, more intensive, learning needs. Success For All

also provides a systematic approach for adapting the learning environment to meet diverse learning needs. Whether schools choose prepackaged interventions or develop their own, they should ensure that new methods will increase opportunities for teachers to adapt the learning environments to meet the diverse needs of children in their classrooms.

Recommendations

This combination of analyses provides compelling evidence that the types of interventions funded through ELIGP improved literacy outcomes in Indiana's elementary schools. Clearly, the program merits continued funding as a means of improving early reading instruction in Indiana schools. While there is evidence that Explicit/Direct Approaches helps increase the number of students who pass the state tests, there is also a clear need to balance these approaches with other methods that enhance the probability of success for more children.

These analyses provide evidence that Reading Recovery has improved the opportunities available to Grade 1 students who need special assistance learning to read. Reading Recovery provides a well integrated balance between holistic and explicit approaches that seems to work well for children with reading difficulty, as evidenced by the fact that it helps reduce retention rates. However, there is also evidence that many of the class-wide and school-wide intervention methods have more substantial effects. In particular, the Literacy Collaborative, a class-wide intervention that also includes a Reading Recovery component, seems to be effective.

Further, several of the other class-wide and school-wide methods—Success For All, First Steps, and Even Start—had a substantial influence on literacy related outcomes. Thus, it is important to continue providing opportunities for schools to engage in school-wide interventions, as well as to experiment with their own methods.

Based on this evaluation, three recommendations merit consideration:

- The ELIGP program should be continued, possibly with more emphasis on school-wide and class-wide intervention approaches. However, it is also appropriate to continue investing in professional development for Reading Recovery, because of the evidence of program effects.
- Evaluation research that can provide evidence of ELIGP impact should also be continued. The evaluation research provides information that can inform planning for literacy improvement in school corporations and in school buildings. There is also a need for more systematic studies that include pre- and post-tests.
- An increased emphasis on university-school collaboration is recommended as a strategy for promoting professional development. Indiana's universities should be encouraged to provide systematic support for the IDOE's efforts to improve early literacy programs in schools. This includes an increased emphasis on Explicit/Direct Approaches in both teacher preparation and ongoing professional development, especially efforts that provide balanced approaches that include both Connected-Text and Explicit/Direct methods.